REMARKS

File History

In the final Office action of 6/06/2006, the following rejections appear to have been made:

> Claims 1-15 and 21-23 were rejected under 35 USC §**103**(a)/102(e) as being obvious over **You** (US 6,706,613) in combination with **Wang** (US Pub 2005/0110102 published 5/26/05 on basis of application filed 11/25/03). Reference was also made to **Xing** (US Pub 2003/0124873 published 7/3/03) as part of the justification for rejection.

Paraphrasing of Rejection

If understood correctly by Applicant, the rejection boils down to these points:

- You '613 teaches to reduce Bird's Beak;
- Fig. 2B of You '613 shows ONO with 3 layers;
- Fig. 2C of You '613 shows results of oxidizing 2B;
- It is obvious to substitute one oxidation for another;
- Wang '102 teaches to use ISSG (including to use a dry range);
- There is no inventiveness in substituting one known oxidation process (ISSG) for another (dry O2 oxidation).

Interview Summary

Applicant thanks the Examiner for the courtesy of the telephone interview that took place 7/21/2006. No agreement was reached. The Examiner asked Applicant's representative to present formal arguments in writing as is being done here.

Among the issues discussed on 7/21/2006 were:

(1) Applicant's contention that You '613 teaches away by virtue of reciting "dry oxidation";

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(2) The Examiner's contention that the word "comprising" always causes a claim having elements A and B to be anticipated by a reference showing A, B and C;

(3) Applicant's counter that the term "exposed" in the pending claims creates an exception to contention number (2);

(4) The Examiner's contention that it is proper to take the "structure" of You '613 and apply the ISSG of Wang '102 to that structure; and

(5) The Examiner's contention that all ISSG processes are essentially the same with hydrogen concentration/flow being a mere "result effective" variable.

During the interview, Applicant's representative argued that ISSG per se is not being claimed and that not all ISSG's are the same. The Examiner appeared to differ with regard to the latter position.

Also during the interview, Applicant's representative argued that the issues have not yet crystallized and that Applicant should be allowed to file a Rule 132 even after this first post-final, written response because the Examiner's position is not yet fully articulated with regard to detailed arguments. The Examiner was noncommittal with regard to the issue of allowing entry of a Rule 132 after the first post-final, written response.

Applicants' Overview of Outstanding Office Action in Light of Interview of 7/21/2006

In light of Examiner remarks made on 7/21/2006 Applicant understands the outstanding Office action of 6/6/2006 as having the following noteworthy features:

(1) The PTO is taking a position that despite recitation in You '613 of a **"dry oxidation"** process (col. 6, line 38 and col. 7, line 40), it is permissible for the PTO to ignore this specific "away" teaching, and to instead take the intermediate "structure" produced in You '613, and to further find it obvious to apply a specific ISSG process to that structure, where the specific ISSG process is selected from a broad range of possibilities presented in Wang '102.

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(2) The PTO is taking a position that all ISSG processes are essentially the same irrespective of the surface composition that is being oxidized or the goals sought to be achieved; and also that selection of a particular hydrogen concentration is merely a "result effective" choice and hence an inherently obvious choice.

(3) **Most importantly,** Page 6 of the Final OA shows that the PTO is looking at You Fig. 2C taken alone without fully reading the accompanying text. Because the claims contain the word "comprising", the PTO ignores the fact that You's sidewall 120a and substrate surface 100 have a nitride film formed thereon per You's specification at col. 6, lines 25-30 and lines 47-52. Applicant counters that You '613 fails to teach plural "exposed" material layers at the time that the "dry" oxidation is applied. Thus combination of You '613 with Wang '102 fails to reconstruct the claimed subject matter .

Detailed Analysis of the Paraphrased Rejection

Applicant submits that the outstanding rejection can be reduced to: "It is obvious to try one oxidation process (ISSG of Wang) as a substitute for another (dry oxidation of You)".

Two major problems with such a rejection:

- "Obvious to try" is almost never a valid basis for rejection.
- You plus Wang does not reconstruct Applicant's claims.

Over the years, judges have come to understand that almost every invention can be reconstructed with the aid of hindsight merely by using the vast library of existing knowledge as a convenient shopping mall and by using an applicant's disclosure as the blueprint or shopping list for selectively picking and choosing from the shopping mall only those items that will meet the claim limitations while conveniently ignoring others, this culminating with an argument that it was "obvious to try" the cherry picked components due to the magnificent end result. The problem with such an approach is that it smacks of hindsight and it is built on circular reasoning.

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Incidentally, complete reconstruction of Applicant's claim is as essential to a §103 rejection as it is to a §102(b) rejection because the latter is the epitome of the former.

In re O'Farrell, 853 F.2d 894, 7 USPQ2d 1673, 1681 (Fed. Cir. 1988) explains:

> [T]his court and its predecessors have repeatedly emphasized that "obvious to try" is not the standard [for testing] under § 103. [T]he meaning of this maxim is sometimes lost [however]. Any invention that would in fact have been obvious under § 103 would also have been, in a sense, obvious to try. The question is: when is an invention that [looks like it] was obvious to try nevertheless nonobvious?
>
> The admonition that "obvious to try" is not the standard under § 103 has been directed mainly at two kinds of error. In some cases **[(1)]**, what would have been "obvious to try" would have been to vary all parameters or [to] try each of numerous possible choices until one possibly arrived at a successful result, where the prior art gave either [(1a)] **no indication of which parameters were critical or** [(1b)] **no direction as to which of many possible choices is likely to be successful.** E.g., *In re Geiger*, 815 F.2d at 688, 2 USPQ2d at 1278; *Novo Industri A/S v. Travenol Laboratories, Inc.*, 677 F.2d 1202, 1208, 215 USPQ 412, 417 (7th Cir. 1982); *In re Yates*, 663 F.2d 1054, 1057, 211 USPQ 1149, 1151 (CCPA 1981); *In re Antonie*, 559 F.2d at 621, 195 USPQ at 8-9.
>
> In others [--other cases **(2)**], what was "obvious to try" was to explore a new technology or general approach that seemed to be a promising field of experimentation, where the prior art gave only general guidance as to the particular form of the claimed invention or how to achieve it. *In re Dow Chemical Co.*, 837 F.2d 469, 473, 5 USPQ2d 1529, 1532 (Fed. Cir. 1988); *Hybritech, Inc. v. Monoclonal Antibodies, Inc.*, 802 F.2d 1367, 1380, 231 USPQ 81, 90-91 (Fed. Cir. 1986), cert. denied, 480 U.S. 947, 107 S. Ct. 1606, 94 L. Ed. 2d 792 (1987); *In re Tomlinson*, 53 C.C.P.A. 1421, 363 F.2d 928, 931, 150 USPQ 623, 626 (CCPA 1966).
>
> [*Emphasis added, square bracketed text added.*]

Justification for Applicant's assertion that the present rejection boils down to an "obvious to try" one

At page 5, last 5 lines of paragraph 3, the OA asserts that You '613 merely fails to recite the specific details for the volumetric flow ratio of $\mathbf{H_2 : O_2}$.

This is categorically wrong. You does implicitly recite a specific $\mathbf{H_2 : O_2}$ ratio. It is zero ($H_2/O_2=0$). You '613 directs the ordinary artisan to use "dry" oxidation (col. 6, lines 38-46; and also col. 7, line 40). The ordinary artisan would understand "dry" oxidation in this

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particular context, to mean: no Hydrogen (H_2=0)and hence no water formation. That is why it is termed a "dry" oxidation.

Despite this very specific teaching by You '613, the Final OA continues at page 5, end of paragraph 3, to assert that the ordinary artisan would nonetheless be "motivated" to introduce hydrogen into the process; and more so to try "a known volumetric flow rate such as the rate taught by Wang" [*Emphasis added.*]

At page 6, paragraph 5, the Final OA asserts:

"Wang teaches that the ratio of H_2/H_2+O_2 can be 0.1%" [*Emphasis added.*]

There is a world of difference between "can be" and "should be". Nowhere does Wang teach that in the situation of You '613, at the process point where You performs "dry" oxidation (col. 6, lines 38-46 of You) that an ISSG process should instead be used and that the utilized ratio of H_2/H_2+O_2 should be 0.1%.

Thus the rejection boils down to an "obvious to try" one.

Case law applied to the present situation

The above quoted discussion in In re O'Farrell regarding the first class of cases ([1a] and [1b]) applies to the present case. Wang '102 does not teach which parameters are critical to a particular result in You's situation. Wang does not indicate that a specific dry H_2/H_2+O_2 ratio would provide "success" for the goals set forth in You '613. (And even if there was success, it would still not recreate the claimed subject matter --this being a whole other issue.)

Instead Wang '102 warns that: "The oxygen radical O. concentration ... depends upon pressure, temperature, and relative amount of hydrogen in the chamber." (at [0031]). Wang cautions that "the ISSG process depends upon using process pressure, flow rate and temperature in the chamber within specified ranges. ... [I]n some embodiments the following parameters can be effective: temperature in the range about 800°C to about 1000°C; pressure in the range about 1 torr to about 20 torr; flow rate of H_2+O_2 in the range about 1 slm to about

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40 slm. The ratio of H_2/H_2+O_2 is in the range about 0.1% to about 40%. " (at [0032] *Emphasis and bracketed text added.*]

So Wang is not promising that ISSG will be effective in all environments as long as one arbitrarily picks numbers from each of the disclosed ranges. Wang is instead cautioning that only in "some" embodiments is there a possibility that the given parameters "can be" effective without actually disclosing in that passage what "effect" is being sought.

Even if we ignore for the moment the fact that You '613 **teaches away** from Wang '102 by directing the ordinary artisan to use "dry"" oxidation with O_2 gas in given temperature range for the purpose of -forming a given thickness of oxide (40Å) 116 on top of the **single,** all-nitride film that forms on sidewall 120a and substrate 100 (You col. 6, lines 29-30)-- there are nonetheless a large number of variables to be played with in terms of what could be tried as an alternate "oxidation" process.

ISSG is not the only possibility. HTO is clearly an alternate candidate as even the PTO admits at OA page 3, last two lines. The source of oxygen can be varied over a large number of oxygen containing materials. The process temperatures, pressures and flow rates can be varied over a large number of possible permutations of settings. The desired thickness of formed oxide can also be played with.

In fact, Yu 6,184,155 which is mentioned in Wang '102 directs the ordinary artisan to have a "**steam environment**" when performing conventional ISSG (Yu at col. 3, line 26) and the current Office action does not explain why the ordinary artisan would not choose the recommended wet or steamy ISSG as recommended by Yu '155; but would instead specifically seek out a more dry ISSG from the range of possibilities offered under the ISSG tent of Wang.

The question actually expands into one of why --of all the possible, alternate oxidation processes (e.g., HTO, dry oxidation, steamy ISSG, etc.) the ordinary artisan would be motivated "to try" (without worrying for the moment about likelihood of success) a very specific, dry ISSG? What motivation other than pure hindsight, would have led the ordinary artisan to picking and trying this very specific, dry ISSG process for the situation present in You's process just after col. 6, line 37 (just after the high temperature exposure to nitrogen)?

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Why would the artisan have an expectation of likely success, and what exactly is "success" in this particular situation? ISSG reduces the effectiveness of You's nitride barrier and thus destroys the very goal that You is seeking in creating the barrier. So is that "success"?

The Office Action (OA) asserts that the motivation would have been because Wang teaches that ISSG "provides excellent thickness control" (OA page 3, last 2 lines of top paragraph).

In this regard, the PTO misses the import of Wang's teaching. Wang is trying to grow oxide simultaneously on two different surfaces of Fig. 4E: silicon region 432 and SiN region 426. The ISSG-grown oxide is shown schematically in Fig. 4F. Note that oxide growth 434 is much thicker than oxide growth 428. The reason is the growth disparity between silicon and nitride. Wang is trying to reduce this disparity. See Wang paragraph [0034]. Wang teaches there that using a very dry mix produces a large --and undesirable disparity. Wang shows in his Example 3 and at paragraph [0047] that the use of a steamy ISSG (H_2/H_2+O_2 of about 33%) produces a reduced disparity: roughly 0.75 to 1.0 (SiN/Si oxidations) where such a reduced disparity is Wang's goal.

Assuming arguendo that the ordinary artisan had settled on ISSG, why --of all the possible, hydrogen concentrations selectable among ISSG processes (up to "about 40%" according to Wang paragraph [0032], last line) -- would the ordinary artisan have picked the low hydrogen range recited in the present claims other than because of hindsight and an "obvious to try" predisposition in one's thinking? Note that Wang urges the artisan to use the more steamy formulations in Wang's examples. You teaches the other way, to use "dry" oxidation. You '613 and Wang '102 clearly teach away from one another.

Speaking of alternate possibilities, Xing '873, it should be noted, uses HTO to form oxide film 408 of Fig. 4B as set forth in its paragraph [0032] and then, only after having used HTO, does Xing '873 use ISSG merely as an annealing step in paragraph [0033]. So why would an ordinary artisan not use Xing's approach? Why just Wang and Wang alone if not merely out of hindsight? The Office action does not explain. This increases the suspicion that an unconscious form of hindsight is operating here.

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Signposts of Hindsight Thinking

The courts have many times recognized that resort to hindsight thinking is highly tempting, and therefore great caution should be applied; particularly where the invention in retrospect appears to be a simple one (See *In re Dembiczak*, 50 USPQ2d 1614, 1617 (Fed. Cir. 1999)).

As set forth in In re Kotzab, 217 F.3d 1365, 1369-70, 55 USPQ2d 1313, 1316 (Fed. Cir. 2000):

> A critical step in analyzing the patentability of claims pursuant to section 103(a) is casting the mind back to the time of invention, to consider the thinking of one of ordinary skill in the art, guided only by the prior art references and the then-accepted wisdom in the field. ... Close adherence to this methodology **is especially important in cases where the very ease with which the invention can be understood may prompt one "to fall victim to the insidious effect of a hindsight syndrome** wherein that which only the invention taught is used against its teacher." ...
>
> Most if not all inventions arise from a combination of old elements. ... Thus, every element of a claimed invention may often be found in the prior art. ... However, identification in the prior art of each individual part claimed is insufficient to defeat patentability of the whole claimed invention. ... Rather, to establish obviousness based on a combination of the elements disclosed in the prior art, there must be some motivation, suggestion or teaching of the desirability **of making the specific combination** that was made by the applicant. [citations omitted] [*Emphasis added.*]

There are certain well known indicia that indicate the hindsight syndrome may be in play. One of them is that of ignoring one or more "away teachings" by a first reference and stubbornly combining it to a second reference. See *In re Gurley*, 27 F.3d 551, 553 (Fed. Cir. 1994) {"A reference may be said to teach away when a person of ordinary skill, upon reading the reference, would be ... led in a direction divergent from the path that was taken by the applicant."}

Another indicator of hindsight is selective "picking and choosing", not only from within a given one reference but in the combining of multiple references. It is well established that each reference must be read in whole for what it fairly teaches one of ordinary skill. In this regard, the outstanding grounds of rejection choose to selectively ignore You's teaching

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of "dry" oxidation and You's teaching of a different technique for controlling Bird's Beak (namely, forming a single nitride barrier skin on the outside of the ONO stack). The outstanding grounds of rejection choose to selectively ignore Wang's teaching of a more steamy ISSG in Wang's operative examples. The outstanding grounds of rejection choose to selectively ignore that You and Wang teach away from one another (ultra dry versus steamy).

The final Office action (page 3, bottom of first full paragraph) in effect asserts that:

> "It would have been obvious to one with ordinary skill in the art at the time of the invention to form an oxide film [*on top of the nitride coated sidewall 120a and substrate 100 of You '613*] by using a dry ISSG process as taught by Wang in the process of You. As recognized by one skilled in the art, a dry ISSG process provides excellent thickness control and the thermal budget can be reduced (Abstract)."
> [*Emphasis and bracketed text added.*]

It appears to Applicant from this that a full appreciation of You '613 has not been ascertained by the PTO and a full appreciation of Wang has not been ascertained by the PTO.

- The scope and content of the prior art must be ascertained

One important feature overlooked in the grounds of rejection --and Applicant has already argued this ad nauseum -- is the fact that You forms **a single**, nitrogen barrier film (see again col. 6. lines 25-29 and 49-54) over the sidewalls and substrate before subjecting the thus protected sidewalls (and therefore unexposed sidewall materials) to a "dry" oxidation process. In doing so, You '613 is pursuing a different approach to controlling Bird's Beak than that used in Applicant's claims. You is seeking to use the **single**, nitride barrier film as a barrier to oxidation disparity. You is seeking to slow down advancement of the oxidation front through the silicon (poly) portions 110 and 104 of his stack in Fig. 2B. Adding hydrogen would reduce the effectiveness of the nitride barrier and thereby go against You's teachings. That is why You implores the ordinary artisan to a use "dry" oxidation.

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The PTO is rejecting something other than Applicant's subject matter

At page 6, paragraph 6 of the Final OA, the PTO asserts:

> Applicant argues ... ISSG be applied to a stack sidewall having further **exposed** thereat .... [T]his argument is not persuasive. Note that **the structure** and number of ONO layers ... of the present[ly claimed] invention **is the same as [in] You's device** (ONO layers 108 [are] comprised [of] Oxide 105a, Nitride 106a and Oxide 107a --**see Fig. 2C**).
>
> [*Emphasis and bracketed text added.*]

No it is not the same structure. It appears to Applicant's representative from the above that the PTO is failing to properly construe the claims and perhaps failing to properly understand the import of the transition term "comprising" in Applicant's claims.

The term "comprising" is not a blank check giving an Examiner freedom to add whatever "element C" he wants to the structure (e.g., "elements A, B") recited in the claims. Claim 1 calls for "at least one sidewall [including] at least three **exposed** material layers" and for a "subjecting [of] **the** at least one sidewall to a dry ISSG process".

Merriam-Webster's Online Dictionary (10th edition) defines "exposed" as: (2) **not** shielded or protected; also: **not** insulated <an exposed electric wire>. [*Emphasis added.*]

Thus the plain language of Claim 1 precludes having an "element C" such as a single nitride coating that shields, protects or insulates the ONO materials from direct exposure to the process chamber environment.

At the time that You's stack (Fig. 2B) is subjected to "dry" oxidation, You's stack does not have a sidewall including at least three **exposed** material layers. There is only one exposed material layer, namely the thin nitride film that forms completely over the sidewall 120a of You's stack (Fig. 2B) and over the top substrate surface 100 and thereby shields, covers, and insulates layers 105a, 106a, 107a from the surrounding environment so as to render them unexposed to the environment. See again, You col. 6. lines 25-29 and 49-54.

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It appears to Applicant's representative that the PTO is eviscerating the word "exposed" from Applicant's claims and that the PTO is altering the meaning of method step (a) of "subjecting **the** at least one sidewall to a dry ISSG process". The PTO is proposing to subject a different structure, namely, the nitride covered sidewall 120a of You '613 to such a process.

In doing so, the PTO is rejecting a claim other than the one that Applicant has presented as that which he regards to be his invention (see 35 USC §112).

It is axiomatic that during patent prosecution, claims are given their broadest reasonable interpretation consistent with the specification, and **the claim language** is to be read in view of the specification as it would be interpreted by one of ordinary skill in the art. *In re Morris*, 127 F.3d 1048, 1053-54, 44 USPQ2d 1023, 1027 (Fed. Cir. 1997); *In re Zletz*, 893 F.2d 319, 321, 13 USPQ2d 1320, 1322 (Fed. Cir. 1989); *In re Sneed*, 710 F.2d 1544, 1548, 218 USPQ 385, 388 (Fed. Cir. 1983); *In re Okuzawa*, 537 F.2d 545, 548, 190 USPQ 464, 466 (CCPA 1976).

More specifically, in *In re Zletz* (13 USPQ2d at 1322) the court ruled that "It is incorrect for the [PTO] to read unwritten limitations into [the] claims ..., limitations contrary to the plain words of the claims, and contrary to the interpretations that the inventor himself placed on the claims [by placing broader words in his claims than those matching the PTO's desired, narrow interpretation of the claims as set forth by a lost count--13 USPQ2d at 1321] [*Emphasis and bracketed text added.*]. The *In re Zletz* case differs from the present case to the extent that there, the PTO was seeking to narrow the scope of Zeltz's claims (to that of a PTO-generated interference-count) whereas here the PTO seeks to broaden the present claims by pretending the word "exposed" is not present in the claims. In either case, it is legal error for the PTO to rewrite Applicant's claims because 35 USC §112 leaves it to the prerogative of the Applicant to define the subject matter which the applicant regards as his invention.

- The combination of You and Wang fails to reconstruct the subject matter of Applicant's claims

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Even if, for sake of argument, You and Wang could be properly combined as proposed by the PTO, such a combination would still fail to reconstruct the subject matter of Applicant's claims because the use of ISSG on "exposed" sidewall materials would not be realized. It is axiomatic that rejections based on 35 U.S.C. § 103 must rest on a factual basis, and that in making such a rejection, the examiner has the initial duty (prima facie duty) of supplying the requisite factual basis and may not, because of doubts that the invention is patentable, resort to speculation, unfounded assumptions or hindsight reconstruction to supply deficiencies in the factual basis. *In re Warner*, 379 F.2d 1011, 1017, 154 USPQ 173, 178 (CCPA 1967), cert. denied, 389 U.S. 1057 (1968). See also in regard to claim construction: *Gechter v. Davidson*, 116 F.3d 1454, 1457, 43 USPQ2d 1030, 1032 (Fed. Cir. 1997); and **Phillips v. AWH Corp.**, 415 F.3d 1303, 1316, 75 USPQ2d 1321, 1329 (Fed. Cir. Jul. 12, 2005)(en banc) {"The Patent and Trademark Office ('PTO') determines the scope of claims in patent applications not solely on the basis of claim language, but upon giving claims their broadest reasonable construction 'in light of the specification as it would be interpreted by one of ordinary skill in the art.'"}

With regard to Claim 12, stating that it would have been obvious to select the recited "height variation ratio" is circular reasoning. It is incumbent upon the PTO to articulate why an ordinary artisan would have been led to such a course of action.

With regard to Claims 13-14, stating that B is an obvious consequence of A and therefore B is obvious is circular reasoning. It is incumbent upon the PTO to articulate why an ordinary artisan would have been led to realizing that a larger erase speed can be attained after performing dry ISSG. The realization comes only after the artisan has performed exploratory experimentation and has come to a recognition of the improved sate. But that is the definition of an inventor (in the "discovery" realm of inventiveness) and not the definition of an ordinary artisan.

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CONCLUSION

Returning to Applicant's paraphrasing on page 2 of this paper, it can now be seen that things are not what they seemed:

- You '613 teaches to reduce Bird's Beak

  --(*by use of a single nitride barrier film*);

- Fig. 2B of You '613 shows ONO with 3 layers

  --(*that are coated by a single nitride barrier film*);

- Fig. 2C of You '613 shows results of oxidizing 2B

  --(*via "dry" oxidation through the single nitride barrier film*);

- It is obvious to substitute one oxidation for another

  --(*oxidations are not freely interchangeable, each has subtleties*);

- Wang '102 teaches to use ISSG (including to use a dry range)

  --(*Wang's examples are in the wet range and used for a different purpose, namely, reducing oxidation disparity*);

- There is no inventiveness in substituting one known oxidation process (ISSG) for another (dry O2 oxidation)

  --(*Substituting a wetter oxidation would probably degrade the result You seeks for his nitride-coated stack.*)

In light of the foregoing, Applicant respectfully requests that the outstanding grounds of rejection be withdrawn and the claims be reconsidered and allowed. Should any other action be contemplated by the Examiner, it is respectfully requested that he contact the undersigned at (408) 392-9250 to discuss the application.

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The Commissioner is authorized to charge any underpayment or credit any overpayment to Deposit Account No. 50-2257 for any matter in connection with this response, including any fee for extension of time and/or fee for additional claims, which may be required.

I hereby certify that this correspondence is being deposited with the United States Postal Service as First Class Mail in an envelope addressed to: Mail Stop Amendment, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on July _31_, 2006.

7/28/2006

Attorney for Applicant(s) Date of Signature

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APPENDIX A

CLAIMS LISTING

(Claims 1-15, 21-23 following Amendment of March 2006)

Claim 1 (*Previously Presented*): A method of forming sidewall dielectric on an ONO-type memory cell stack where at least one sidewall of the ONO-type memory cell stack includes at least three **exposed** material layers with at least two of the exposed material layers being respectively composed of different materials, the method comprising:

(a) subjecting **the** at least one sidewall to a dry ISSG process (In-Situ Steam Generation) where the dry ISSG process comprises:

(a.1) flowing molecular oxygen (O_2) towards the stack; and

(a.2) flowing molecular hydrogen (H_2) towards the stack, where the volumetric flow ratio of the H_2 to the O_2 is less than about 0.2.

Claim 2 (*Original*)**:** The sidewall dielectric forming method of **Claim 1** wherein:

(a.2a) said volumetric flow ratio of H_2/O_2 is less than about 0.1.

Claim 3 (*Original*): The sidewall dielectric forming method of **Claim 1** wherein:

(a.2a) said volumetric flow ratio of H_2/O_2 is equal to, or less than, about 0.02.

Claim 4 (*Previously Presented*)**:** The sidewall dielectric forming method of **Claim 3** and further comprising:

(b) rapidly heating the flowing oxygen (O_2) and flowing hydrogen (H_2) to a temperature in the range of about 850°C to about 1050°C as they flow towards said at least one sidewall.

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Claim 5 (*Previously Presented*)**:** The sidewall dielectric forming method of **Claim 3** and further comprising:

(b) continuing the subjecting of the at least one sidewall to the dry ISSG process for a duration selected from the range of about 20 seconds to about 300 seconds.

Claim 6 (*Previously Presented*)**:** The sidewall dielectric forming method of **Claim 1** and further comprising:

(a.1a) **varying** the O_2 flow rate over the range of about 3slm to about 10slm (ten standard liters per minute).

Claim 7 (*Previously Presented*)**:** The sidewall dielectric forming method of **Claim 1** and further comprising:

(a.2a) **varying** the H_2 flow rate over the range of about 0.1slm to about 1slm.

Claim 8 (*Previously Presented*)**:** The sidewall dielectric forming method of **Claim 3** and further comprising:

(b) establishing a chamber pressure for the flowing oxygen (O_2) and flowing hydrogen (H_2) in the range of about 5 Torr to about 50 Torr.

Claim 9 (*Previously Presented*)**:** The sidewall dielectric forming method of **Claim 1** and further wherein:

(b) **said** at least three **exposed** material layers of the ONO-type memory cell stack includes:

(b.1) a first silicon nitride layer;

(b.2) a first silicon layer; and

(b.3) a first silicon oxide layer.

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Claim 10 (*Previously Presented*)**:** The sidewall dielectric forming method of **Claim 9** and further wherein **said** at least three **exposed** material layers of the ONO-type memory cell stack includes:

(b.4) a second silicon layer;

(b.5) a second silicon oxide layer;

(b.6) a tunnel dielectric layer;

(b.7) wherein the first silicon nitride layer is interposed between the first and second silicon oxide layers; and

(b.8) wherein the combination of the first and second silicon oxide layers and the first silicon nitride layer is interposed between the first and second silicon layers.

Claim 11 (*Previously Presented*)**:** The sidewall dielectric forming method of **Claim 10** and further wherein **said** at least three **exposed** material layers of the ONO-type memory cell stack includes:

(b.9) a second silicon nitride layer; disposed above the first silicon layer.

Claim 12 (*Previously Presented*)**:** The sidewall dielectric forming method of **Claim 3** and further wherein:

a height **variation** ratio, $R_H = H_{outer}/H_{inner}$, determined for the ONO-type memory cell stack after formation of the sidewall dielectric by the dry ISSG process, is about 1.20 or less, where H_{inner} represents a stack height at a lateral position in the stack that is spaced away from the stack edges and where H_{outer} represents a stack height at a lateral position near or at one of the stack edges.

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Claim 13 (*Previously Presented*): The sidewall dielectric forming method of **Claim 10** and further wherein lateral sidewall breakdown voltages are substantially uniform along the height of the ONO-type memory cell stack after formation of the sidewall dielectric by the dry ISSG process.

Claim 14 (*Previously Presented*): The sidewall dielectric forming method of **Claim 10** and further wherein a larger erase speed is obtained in a memory cell having said ONO-type memory cell stack after formation of the sidewall dielectric **by the dry ISSG process**, where the larger erase speed is larger than a corresponding erase speed obtained in a corresponding memory cell having an ONO-type memory cell stack with sidewall dielectric formed by an HTO process.

Claim 15 (*Previously Presented*): The sidewall dielectric forming method of **Claim 1** and further comprising:

(b) after said dry ISSG process, forming **further and supplemental** sidewall dielectric by a **non-ISSG** oxidation process.

Claims 16-20: (*Canceled*).

Claim 21 (*Previously Presented*): The sidewall dielectric forming method of **Claim 1** and further comprising:

(a.1a) setting the O_2 flow rate over the range of about 3slm to about 10slm (ten standard liters per minute).

Claim 22 (*Previously Presented*): The sidewall dielectric forming method of **Claim 21** and further comprising:

(a.2a) setting the H_2 flow rate over the range of about 0.1slm to about 1slm.

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Claim 23 (*Previously Presented*): A method of forming sidewall dielectric on an ONO-type memory cell stack where at least one sidewall of the ONO-type memory cell stack includes at least three **exposed** material layers with at least two of the exposed material layers being respectively composed of different materials, the method comprising:

(a) subjecting **the** at least three **exposed** material layers of the sidewall of the ONO-type memory cell stack to a **dry ISSG** process (In-Situ Steam Generation) where the dry ISSG process generates short lived oxygen radicals whose reactivity extinguishes before the short lived oxygen radicals are able to **permeate as deep** into the ONO-type memory cell stack and oxidize materials therein as would the reactive oxygen of a High Temperature Oxidation (HTO) process applied to an essentially same ONO-type memory cell stack.

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